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OCT 10 2002

TECH CENTER 1600/2900

SEQUENCE LISTING

<110> BRAUN, Curtis
PURAC, Admir
BORGFORD, Thor

<120> Improved Ricin-Like Toxins for Treatment of Cancer

<130> 10447-22

<140> US 10/089,058

<141> 2000-10-04

<150> US 60/197,409

<151> 2000-04-14

<150> US 60/157,807

<151> 1999-10-04

<160> 130

<170> PatentIn version 3.1

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<213> Ricinus communis

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<223> primer 301-5'

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<223> pAP301 (MMP-9) linker

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<212> PRT

<213> Ricinus communis

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Val	Pro	Asn	Phe	Asn	Ala	Asp	Val	Cys	Met	Asp	Pro	Glu			
			20					25							

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<211> 29

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<213> Artificial Sequence

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<223> PAP301(MMP-9) linker

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Gln	Arg	Asn	Phe	Asn	Ala	Asp	Val	Cys	Met	Asp	Pro	Glu			
			20					25							

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<211> 24

<212> DNA

<213> Artificial Sequence

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<223> primer 302-3'

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<210> 9

<211> 105

<212> DNA

<213> Ricinus communis

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<211> 30

<212> DNA

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<400> 10
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<210> 11

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP302(MMP-9) linker

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<210> 12

<211> 1834

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP302

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<211> 29

<212> PRT

<213> *Ricinus communis*

<400> 13

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<210> 14

<211> 22

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP302 (MMP-9) linker

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1 5 10 15

Gln Cys Met Asp Pro Glu
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<210> 15

<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer 303-3'
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<210> 16
<211> 105
<212> DNA
<213> Ricinus communis

<400> 16
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<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> primer 303-5'
<400> 17
tgcaattcct tgcggagagc atctatacac catgag 36

<210> 18
<211> 45
<212> DNA
<213> Artificial Sequence

<220>

<223> pAP303 (MMP-1) linker

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<210> 19

<211> 1831

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP303

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120

aaacaataacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac

180

tttacagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca

240

gtgttgccaa acagagttgg tttgcctata aaccaacggc ttattttagt tgaactctca

300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggcggc

360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca

420

atcactcatc ttttcaactga ttttcaaat cgatatacat tcgccttgg tggtaattat

480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca

540

ctagaggagg ctagtcagc gctttattat tacagtactg gtggcactca gcttccaact

600

ctggctcggtt ctttataat ttgcataa atgatttcag aagcagcaag attccaatat

660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc

720

gtaattacac ttgagaatag ttgggggaga cttccactg caattcaaga gtctaaccaa

780

ggagcccttg ctagtccaaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac

840

gatgtgagta tattaatccc tatcatagct ctcattgggtgt atagatgctc tccgcaagga

900

attgcagggc agcggaaattt taatgctgat gtttgtatgg atcctgagcc catagtcgt

960

atcgttaggtc gaaatggtct atgtgttgc gtttagggatg gaagattcca caacggaaac

1020

gcaatacagt tgtggccatg caagtctaat acagatgcaa atcagctctg gactttgaaa

1080

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<211> 29

<212> PRT

<213> Ricinus communis

<400> 20

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							20								25

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<223> PAP303 (MMP-9) linker

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Cys Met Asp Pro Glu
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<210> 22

<211> 24

<212> DNA

<213> Artificial Sequence

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<223> primer 304-3'

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<211> 105

<212> DNA

<213> Ricinus communis

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105

<210> 24

<211> 36

<212> DNA

<213> Artificial Sequence

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<223> primer 304-5'

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<210> 26

<211> 1810

<212> DNA

<213> Artificial Sequence

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<223> pAP304

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<212> PRT

<213> Ricinus communis

<400> 27

Cys	Ala	Pro	Pro	Pro	Ser	Ser	Gln	Phe	Ser	Leu	Leu	Ile	Arg	Pro	Val
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Val	Pro	Asn	Phe	Asn	Ala	Asp	Val	Cys	Met	Asp	Pro	Glu			
			20					25							

<210> 28

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP304 (MMP-9) linker

<400> 28

Cys Ser Pro Gln Gly Ile Ala Gly Gln Cys Met Asp Pro Glu
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<210> 29

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 305-3'

<400> 29

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<210> 30

<211> 105

<212> DNA

<213> Ricinus communis

<400> 30

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tatgcagatg gttcaatacg tcctcagcaa aaccgagata attgcattac aagtgattct	1500
aatatacggg aaacagttgt taagatcctc tcttggcc ctgcattcctc tggccaa	1560
tggatgttca agaatgatgg aaccattta aatttgtata gtgggttgggt gttagatgt	1620
aggcgatcgg atccgagcct taaacaaatc attcttacc ctctccatgg tgacccaa	1680
caaatatggt taccattatt ttgatagaca gattactctc ttgcagtgtg tgtgtcctgc	1740
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<210> 34

<211> 29

<212> PRT

<213> Ricinus communis

<400> 34

Cys	Ala	Pro	Pro	Pro	Ser	Ser	Gln	Phe	Ser	Leu	Leu	Ile	Arg	Pro	Val
1					5				10				15		

Val	Pro	Asn	Phe	Asn	Ala	Asp	Val	Cys	Met	Asp	Pro	Glu			
					20			25							

<210> 35

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP305 (MMP-9) linker

<400> 35

Cys Ala Pro Pro Pro Ser Pro Gln Gly Ile Ala Gly Gln Cys Met Asp
1 5 10 15

Pro Glu

<210> 36

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 308-3'

<400> 36

atgtggggac aatgtgggtgg cggagggccc atagtgcgt a tcgta

45

<210> 37

<211> 120

<212> DNA

<213> Ricinus communis

<400> 37

ctcatgggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca

60

gtggtagccaa attttaatgc tgatgtttgt atggatcctg agcccatagt gcgtatcgta

120

<210> 38

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 308-5'

<400> 38

gccaagagga cctggtggag gtgcgcatct

30

<210> 39

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP308 (MMP-9) linker

<400> 39

gcacacctcac caggtcctct tggcatgtgg ggacaa

36

<210> 40

<211> 1822

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP308

<400> 40

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttgc gatccacctc agggtggctt ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa cttaaccaca gcgggtgcc a ctgtcaaaag ctacacaaac 180

tttacatcagag ctgttcgcgg tcgttaaca actggagctg atgtgagaca t gaaatacc 240

gtgttgc当地 acagagttgg tttgcctata aaccaacgg ttatattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata t ggttgc当地 360

taccgtgctg gaaatagcgc atatttctt catcctgaca atcaggaaga tgcagaagca 420

atcactcatac ttttcaactga t gttcaaaat cgatatacat tcgcctttgg t ggttattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca	540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600
ctggctcggt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat	660
attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc	720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa	780
ggagcctttg ctatccaa tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgc acctccacca	900
ggtcctcttg gcatgtgggg acaatgtggc ggccggagggc ccatagtgcg tatcgttaggt	960
cgaaatggtc tatgtgttga tgttagggat ggaagattcc acaacggaaa cgcaatacag	1020
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ggaaccatca taaatcccag atctagtcta gtttagcag cgacatcagg gaacagtgg	1260
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aatacacaac cttttgttac aaccattgtt gggctatatg gtctgtgctt gcaagcaa	1380
agtggacaag tatggataga ggactgtgc agtaaaaagg ctgaacaaca gtgggctctt	1440
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aggcgatcgg atccgagcct taaacaaatc attcttacc ctctccatgg tgacccaa	1680
caaatatggt taccattatt ttgatagaca gattactctc ttgcagtgtg tgtgtcctgc	1740
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aagttatatac gaattcctgc ag	1822

<210> 41

<211> 29

<212> PRT

<213> Ricinus communis

<400> 41

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val

1

5

10

15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 42

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP308 (MMP-9) linker

<400> 42

Cys Ala Pro Pro Pro Gly Pro Leu Gly Met Trp Gly Gln Cys Gly Gly
1 5 10 15

Gly Gly

<210> 43

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 309-3'

<400> 43

tttaatgctg atgttgtgg tggcggaggg cccatagtgc gtatcgta

48

<210> 44

<211> 120

<212> DNA

<213> Ricinus communis

<400> 44

ctcatggtgt atagatgcgc acctccacca tcgtcacagt ttctttgct tataaggcca

60

gtggtaacaa atttaatgc tgatgttgt atggatcctg agccatagt gcgtatcgta 120

<210> 45
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> primer 309-5'

<400> 45
attcgttgt ccccacatgc caagaggacc aaactgtgac gatggtgg 48

<210> 46
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> pAP309 (MMP-9) linker

<400> 46
gcacctccac catcgtcaca gtttgtcct cttggcatgt ggggacaacg aaatttaat 60
gctgatgtt 69

<210> 47
<211> 1855
<212> DNA
<213> Artificial Sequence

<220>
<223> pAP309

<400> 47
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60
ctttgtttg gatccacctc agggtgtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgcc	ctgtgcaaag ctacacaaac	180
tttacagag ctgttcgcgg tcgtttaaca actggagctg	atgtgagaca tgaaatacca	240
gtgttgc当地 acagagttgg tttgcctata aaccaacgg	ttattttagt tgaactctca	300
aatcatgcag agctttctgt tacattagcg ctggatgtca	ccaatgcata tgtggcggc	360
taccgtgctg gaaatagcgc atatttctt catcctgaca	atcaggaaga tgcagaagca	420
atcactcatc ttttactga tgttcaaaat cgatatacat	tcgccttgg tggtaattat	480
gatagacttg aacaacttgc tggtaatctg agagaaaata	tcgagttggg aaatggtcca	540
ctagaggagg ctatctcagc gctttattat tacagtactg	gtggcactca gcttccaact	600
ctggctcgtt ccttataat ttgcatacca atgatttcag	aagcagcaag attccaatat	660
attgagggag aaatgcgcac gagaattagg tacaaccgga	gatctgcacc agatcctagc	720
gtaattacac ttgagaatac ttgggggaga ctttccactg	caattcaaga gtctaacc	780
ggagccttg ctagtccaaat tcaactgcaa agacgtaatg	gttccaaatt cagtgtgtac	840
gatgtgagta tattaatccc tatcatagct ctcatgggt	atagatgcgc acctccacca	900
tcgtcacagt ttggcctct tggcatgtgg ggacaacgaa	atttaatgc tgatgttgc	960
ggtggcggag ggcccatagt gcgtatcgta ggtcgaaatg	gtctatgtgt tgatgttagg	1020
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gcaaatcagc tctggactt gaaaagagac aatactattc	gatctaattgg aaagtgttta	1140
actacttacg ggtacagtcc gggagtctat gtgatgatct	atgattgcaa tactgctgca	1200
actgatgcca cccgctggca aatatggat aatgaaacca	tcataaatcc cagatctagt	1260
ctagtttag cagcgacatc agggAACAGT ggtaccacac	ttacagtgc aaccaacatt	1320
tatgcgtta gtcaagggtg gtttctact aataatacac	aacctttgt tacaaccatt	1380
gttggctat atggctgtg cttgcaagca aatagtggac	aagtatggat agaggactgt	1440
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caaaaccgag ataattgcct tacaagtgtat tctaatac	ggaaaacagt tgttaagatc	1560
ctctcttgcgt gcccgtcatc ctctggccaa cgatggatgt	tcaagaatga tggaccatt	1620
ttaaatttgcgt atagtggtt ggtgttagat gtgaggcgat	cggatccgag ccttaaaca	1680
atcattcttt accctctcca tggtgaccca aaccaaataat	ggttaccatt atttgtatag	1740
acagattact ctcttgcagt gtgtgtgtcc tgccatgaaa	atagatggct taaataaaaa	1800
ggacattgtaa aattttgtaa ctgaaaggac agcaagttat	atcgaattcc tgcag	1855

<211> 29

<212> PRT

<213> Ricinus communis

<400> 48

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 49

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP309 (MMP-9) linker

<400> 49

Cys Ala Pro Pro Pro Ser Ser Gln Phe Gly Pro Leu Gly Met Trp Gly
1 5 10 15

Gln Arg Asn Phe Asn Ala Asp Val Cys Gly Gly Gly
20 25

<210> 50

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 313-3'

<400> 50

gtatcgccg ggtgtatgga tcctgag

<210> 51

<211> 105

<212> DNA

<213> Ricinus communis

<400> 51

ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttcttgct tataaggcca 60
gtggtagccaa attttaatgc tgatgttgt atggatcctg agccc 105

<210> 52

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 313-5'

<400> 52

tcgtcctggg catctataca ccat 24

<210> 53

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP313 (UPA) linker

<400> 53

ccaggacgag tagtcggcgg g 21

<210> 54

<211> 1807

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP 313

<400> 54

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg	60
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aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtcaaag ctacacaaac	180
tttacagag ctgttcgcgg tcgttaaca actggagctg atgtgagaca taaaatacca	240
gtgttgc当地 acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca	300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc	360
taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca	420
atcactcatc ttttactga tgttcaaaat cgatatacat tcgccttgg tggtaattat	480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca	540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600
ctggctcggt ccttataat ttgcataccaa atgatttcag aagcagcaag attccaatat	660
attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc	720
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaacc	780
ggagccttg ctagtccaaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840
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gtcggcgggt gtatggatcc tgagccata gtgcgtatcg taggtcgaaa tggtctatgt	960
gttcatgtta gggatggaag attccacaac ggaaacgcaa tacagttgtg gccatgcaag	1020
tctaatacag atgcaaatac gctctggact ttgaaaagag acaataactat tcgatcta	1080
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cccaagatcta gtctagttt agcagcgaca tcaggaaaca gtggtaaccac acttacagtg	1260
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gttgttaaga tcctctcttg tggccctgca tcctctggcc aacgatggat gttcaagaat	1560
gatggaaacca tttaaatgtt atatgtggg ttgggtttat atgtgaggcg atcggatccg	1620
agccttaaac aaatcattct ttaccctctc catggatgacc caaaccataat atggttacca	1680

ttatTTGAT agacagatta ctctttgca gtgtgtgtgt cctGCCATGA aaatAGATGG 1740
cttaaataaa aaggacattg taaatTTGT aactgaaagg acagcaagtt atatcgaatt 1800
cctgcag 1807

<210> 55

<211> 29

<212> PRT

<213> Ricinus communis

<400> 55

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 56

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP313 (UPA) linker

<400> 56

Cys Pro Gly Arg Val Val Gly Gly Cys Met Asp Pro Glu
1 5 10

<210> 57

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 314-3'

<400> 57
gtagtcggcg ggggaggcgg gggttgtatg gatcctgag 39

<210> 58

<211> 105

<212> DNA

<213> Ricinus communis

<400> 58
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttcttgct tataaggcca 60
gtggtaccaa attttaatgc tgatgttgtt atggatcctg agccc 105

<210> 59

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 314-5'

<400> 59
tcgtcctgga ccccccgcctc cgcatctata caccat 36

<210> 60

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP314 (UPA) linker

<400> 60
ggaggcgaaaaa gtccaggacg agtagtcggc gggggaggcg ggggt 45

<210> 61

<211> 1831

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP314

<400> 61
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aaacaatacc caattataaa ctttaccaca gcgggtgccca ctgtgcaaag ctacacaaac 180
tttacagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca taaaatacca 240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300
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taccgtgctg gaaatagcgc atatttctt catcctgaca atcaggaaga tgcagaagca 420
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ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600
ctggctcggt ccttataat ttgcattccaa atgatttcag aagcagcaag attccaatat 660
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gtaattacac ttgagaatag ttggggaga cttccactg caattcaaga gtctaaccaa 780
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ggccaacgat ggatgttcaa gaatgatgga accatttaa atttgtatag tgggttggtg	1620
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gacccaaacc aaatatggtt accattat t gatagacag attactctct tgcagtgtgt	1740
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aaggacagca agttatatcg aattcctgca g	1831

<210> 62

<211> 28

<212> PRT

<213> Ricinus communis

<400> 62

Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val Val			
1	5	10	15

Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu		
20	25	

<210> 63

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP314 (UPA) linker

<400> 63

Cys Gly Gly Gly Gly Pro Gly Arg Val Val Gly Gly Gly Gly Gly			
1	5	10	15

Cys Met Asp Pro Glu	
20	

<210> 64

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 315-3'

<400> 64

ccaggacgag tagtcggcgg gtgtatggat cctgag

36

<210> 65

<211> 105

<212> DNA

<213> Ricinus communis

<400> 65

ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtagccaa attttaatgc tgatgtttgt atggatcctg agccc

105

<210> 66

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 315-5'

<400> 66

cccgccgact actcgtcctg ggcatctata caccat

36

<210> 67

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP315 (UPA) linker

<400> 67	ccaggacgag tagtcggcgg gccaggacga gtagtcggcgg gg	42
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<212> DNA		
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	gtgttgc当地 acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca	300
	aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggcggc	360
	taccgtgctg gaaatagcgc atatttctt catcctgaca atcaggaaga tgcagaagca	420
	atcactcatc ttttcaactga tttcaaaaat cgatatacat tcgccttgg tggtaattat	480
	gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca	540
	ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600
	ctggctcggt ccttataat ttgcataccaa atgatttcag aagcagcaag attccaatat	660
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	gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaaccaa	780
	ggagcctttg ctagtccaaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840
	gatgtgagta tattatccc tatcatagct ctcatgggt atagatgccc aggacgagta	900
	gtcggcgggc caggacgagt agtcggcggg tgtatggatc ctgagcccat agtgcgtatc	960
	gtaggctcgaa atggctatg ttttgcgtt agggatggaa gattccacaa cgaaaacgca	1020
	atacagttgt ggccatgcaa gtctaaataca gatgcaaatc agctctggac tttgaaaaga	1080
	gacaatacta ttgcataccaa tggaaagtgt ttaactactt acgggtacag tccggagtc	1140
	tatgtgatga tctatgattt caatactgct gcaactgatg ccacccgctg gcaaataatgg	1200
	gataatggaa ccatcataaaa tcccaatctt agtctatgtt tagcagcgcac atcaggaaac	1260

agtggcacca cacttacagt gcaaaccaac atttatgccg ttagtcaagg ttggcttcct	1320
actaataata cacaaccttt tgttacaacc attgttgggc tatatggtct gtgcttgcaa	1380
gcaaataatgt gacaagtatg gatagaggac tgttagcagtg aaaaggctga acaacagtgg	1440
gctctttatg cagatggttc aatacgtcct cagcaaaacc gagataattg cttacaagt	1500
gattctaata tacgggaaac agttgttaag atccctctttt gtggccctgc atcctctggc	1560
caacgatgga tggtcaagaa tgatggaacc attttaaatt tgtatagtgg gttgggttta	1620
gatgtgaggc gatcgatcc gagccttaaa caaatcatc tttaccctct ccatggtgac	1680
ccaaacccaa tatggttacc attatttga tagacagatt actctcttgc agtgtgttg	1740
tcctgccatg aaaatagatg gcttaataa aaaggacatt gtaaattttg taactgaaag	1800
gacagcaagt tatatcgaat tcctgcag	1828

<210> 69

<211> 29

<212> PRT

<213> Ricinus communis

<400> 69

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val	
1 5 10 15	

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu	
20 25	

<210> 70

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP315 (UPA) linker

<400> 70

Cys Pro Gly Arg Val Val Gly Gly Pro Gly Arg Val Val Gly Gly Cys	
1 5 10 15	

Met Asp Pro Glu
20

<210> 71
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> primer 316-3'
<400> 71
atgcaggc agggaggggg tagtagcggc gggggatgta tggatcctga g 51

<210> 72
<211> 105
<212> DNA
<213> Ricinus communis

<400> 72
ctcatgtgt atagatgcgc acctccacca tcgtcacagt tttcttgct tataaggcca 60
gtggtaccaa atttaatgc tgatgttgt atggatcctg agccc 105

<210> 73
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> primer 316-5'
<400> 73
tccttgcgga ccccccgcctg gagtcccggcc tccgcacatcta tacaccat 48

<210> 74
<211> 69
<212> DNA

<213> Artificial Sequence

<220>

<223> pAP316 (UPA) linker

<400> 74
ggaggcgggg actccagcgg gggtccgcaa ggaattgcag ggcagggagg gggtagtagc 60
ggcggggga 69

<210> 75

<211> 1855

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP316

<400> 75
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60
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aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtcaaag ctacacaaac 180
tttacagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca taaaatcca 240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300
aatcatgcag agcttctgt tacattagcg ctggatgtca ccaatgcata tgtggcggc 360
taccgtgctg gaaatagcgc atatttctt catcctgaca atcaggaaga tgcagaagca 420
atcactcatc ttttcaactga tgttcaaaat cgatatacat tcgccttgg tggtaattat 480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600
ctggctcggt ccttataat ttgcataccaa atgatttcag aagcagcaag attccaatat 660
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gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaaccaa 780
ggagcccttg ctatccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840
gatgtgagta tattaatccc tatcatagct ctcattgggtgt atagatgcgg aggcgggggt 900
ggaggcgggg gtccgcaagg aattgcaggc cagggagggg gtagtagcgg cgggggatgt 960

atggatcctg agcccatagt gcgtatcgta ggtcgaaatg gtctatgtgt tgatgttagg	1020
gatggaagat tccacaacgg aaacgcaata cagttgtggc catgcaagtc taatacagat	1080
gcaaatacagc tctggacttt gaaaagagac aatactattc gatctaattgg aaagtgttta	1140
actacttacg ggtacagtc gggagtctat gtgatgatct atgattgcaa tactgctgca	1200
actgatgcca cccgctggca aatatggat aatggaacca tcataaatcc cagatctagt	1260
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gttgggctat atggtctgtg cttgcaagca aatagtggac aagtatggat agaggactgt	1440
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ttaaatttgt atagtgggtt ggtgttagat gtgaggcgat cggatccgag ccttaaacaa	1680
atcattctt accctctcca tggtgaccca aaccaaataat ggttaccatt atttgtatag	1740
acagattact ctcttgcagt gtgtgtgtcc tgccatgaaa atagatggct taaataaaaa	1800
ggacattgtta aattttgtaa ctgaaaggac agcaagttat atcgaattcc tgcag	1855

<210> 76

<211> 29

<212> PRT

<213> Ricinus communis

<400> 76

Cys	Ala	Pro	Pro	Pro	Ser	Ser	Gln	Phe	Ser	Leu	Leu	Ile	Arg	Pro	Val
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Val	Pro	Asn	Phe	Asn	Ala	Asp	Val	Cys	Met	Asp	Pro	Glu			
			20					25							

<210> 77

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP316 (UPA) linker

<400> 77

Cys Gly Gly Gly Ser Ser Gly Gly Pro Gln Gly Ile Ala Gly Gln
1 5 10 15

Gly Gly Gly Ser Ser Gly Gly Cys Met Asp Pro Glu
20 25

<210> 78

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 318-3'

<400> 78

attgcagggc aggatgaaga ggatgctgat gtttgtatg

39

<210> 79

<211> 105

<212> DNA

<213> Ricinus communis

<400> 79

ctcatggtgt atagatgcgc acctccacca tcgtcacagt ttttttgct tataaggcca

60

gtggcacca attttaatgc tgatgttgt atggatcctg agccc

105

<210> 80

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 318-5'

<400> 80
tccttcgcggaaacccctcgacgatgggtggagg 33

<210> 81

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP318 (MMP-9) linker

<400> 81
gcacccctccacatcgtcaggaggctctccgcaaggaattgcagggcagga tgaagaggat 60
gctgatgtt 69

<210> 82

<211> 1855

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP318

<400> 82
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aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180
tttacagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240
gtgttgc当地 acagagttgg tttgcctata aaccaacggttttagt tgaactctca 300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggcggc 360
taccgtgctg gaaatagcgc atatttctt catcctgaca atcaggaaga tgcagaagca 420
atcactcatacttactga tggtcaaaat cgatatacat tcgccttgg tggtaattat 480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcggt	cctttataat	ttgcatccaa	atgatttcag	aagcagcaag	attccaatat	660
attgagggag	aaatgcgcac	gagaattagg	tacaaccgga	gatctgcacc	agatcctagc	720
gtaattacac	ttgagaatag	ttgggggaga	cttccactg	caattcaaga	gtctaaccaa	780
ggagcccttg	ctagtccaat	tcaactgcaa	agacgtaatg	gttccaaatt	cagtgtgtac	840
gatgtgagta	tattaatccc	tatcatagct	ctcatggtgt	atagatgcgc	acctccacca	900
tcgtcggagg	ttctccgcaa	ggaattgcag	ggcaggatga	agaggaatgc	tgatgttgt	960
atggatcctg	agcccatagt	gcgtatcgta	ggtcgaaatg	gtctatgtgt	tgatgttagg	1020
gatggaagat	tccacaacgg	aaacgcaata	cagttgtggc	catgcaagtc	taatacagat	1080
gcaaattcgc	tctggacttt	gaaaagagac	aatactattc	gatctaattgg	aaagtgttta	1140
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ctagtttag	cagcgacatc	aggaaacagt	ggtaccacac	ttacagtgca	aaccaacatt	1320
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agcagtgaaa	aggctgaaca	acagtggct	ctttatgcag	atggttcaat	acgtcctcag	1500
caaaaccgag	ataattgcct	tacaagtgtat	tctaatacac	ggaaaacagt	tgttaagatc	1560
ctctcttgc	gccctgcata	ctctggccaa	cgatggatgt	tcaagaatga	tggaaccatt	1620
ttaaatttgc	atagtgggtt	ggtgtagat	gtgagggcgat	cggatccgag	ccttaaacaa	1680
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acagattact	ctcttgcagt	gtgtgtgtcc	tgccatgaaa	atagatggct	taaataaaaa	1800
ggacattgtt	aattttgtaa	ctgaaaggac	agcaagttat	atcgaattcc	tgcag	1855

<210> 83

<211> 29

<212> PRT

<213> Ricinus communis

<400> 83

Cys	Ala	Pro	Pro	Pro	Ser	Ser	Gln	Phe	Ser	Leu	Leu	Ile	Arg	Pro	Val
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Val	Pro	Asn	Phe	Asn	Ala	Asp	Val	Cys	Met	Asp	Pro	Glu			
			20					25							

<210> 84

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP318 (MMP-9) linker

<400> 84

Cys Ala Pro Pro Pro Ser Ser Gly Gly Ser Pro Gln Gly Ile Ala Gly
1 5 10 15

Gln Asp Glu Glu Asp Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 85

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 320-3'

<400> 85

gtagtcggcg gggggggagg ctgtatggat cctgag

36

<210> 86

<211> 105

<212> DNA

<213> Ricinus communis

<400> 86

ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttcttgct tataaggcca

60

gtggtagccaa atttaatgc tgatgttgt atggatcctg agccc

105

<210> 87

<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> primer 320-5'
<400> 87
tcgtcctggc ccgcctccgc atctatacac cat 33

<210> 88
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> pAP320 (UPA) linker
<400> 88
ggaggcggac caggacgagt agtcggcggg gggggaggc 39

<210> 89
<211> 1825
<212> DNA
<213> Artificial Sequence

<220>
<223> pAP320
<400> 89
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60
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aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 120
tttacagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca taaaatacca
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 180
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggcggc 240
300
360

taccgtgctg gaaatagcgc atatttctt catcctgaca atcaggaaga tgcagaagca	420
atcaactcatc ttttcaactga tgttcaaaat cgatatacat tcgccttgg tggtaattat	480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca	540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600
ctggctcggt cctttataat ttgcataccaa atgatttcag aagcagcaag attccaatat	660
attgagggag aaatgcgcac gagaatttagg tacaaccgga gatctgcacc agatcctagc	720
gtaattacac ttgagaatag ttggggaga ctttccactg caattcaaga gtctaaccaa	780
ggagcctttg ctatccaat tcaactgcaa agacgtaatg gtccaaatt cagtgtgtac	840
gatgtgagta tattaatccc tatacatgct ctcatggtgt atagatgcgg aggcggacca	900
ggacgagtag tcggcggggg gggaggctgt atggatcctg agcccatagt gcgtatcgta	960
ggtcgaaatg gtctatgtgt tgatgttagg gatggaagat tccacaacgg aaacgcaata	1020
cagttgtggc catgcaagtc taatacagat gcaaattcagc tctggacttt gaaaagagac	1080
aatactattc gatctaattgg aaagtgttta actacttacg ggtacagtcc gggagtcata	1140
gtgatgatct atgattgcaa tactgctgca actgatgcca cccgctggca aatatggat	1200
aatggaacca tcataaatcc cagatctagt ctatgttttag cagcgacatc agggAACAGT	1260
ggtaccacac ttacagtgca aaccaacatt tatgccgtta gtcaagggtt gcttcctact	1320
aataatacac aacctttgt tacaaccatt gttggctat atggtctgtg cttgcaagca	1380
aatagtggac aagtatggat agaggactgt agcagtgaaa aggctgaaca acagtggct	1440
ctttatgcag atggttcaat acgtcctcag caaaaccgag ataattgcct tacaagtgtat	1500
tctaatac gggaaacagt tgttaagatc ctctcttgc tgccctgcata ctctggccaa	1560
cgatggatgt tcaagaatga tggaaccatt taaaatttgc atagtgggtt ggtgttagat	1620
gtgagggcgat cggatccgag ccttaaacaa atcattctt accctctcca tggtgacc	1680
aaccaaataat ggttaccatt attttgcatac acagattact ctcttgcagt gtgtgtgtcc	1740
tgccatgaaa atagatggct taaataaaaa ggacattgta aatggtaa ctgaaaggac	1800
agcaagttat atcgaattcc tgcag	1825

<210> , 90

<211> 29

<212> PRT

<213> Ricinus communis

<400> 90

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 91

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP320 (UPA) linker

<400> 91

Cys Gly Gly Gly Pro Gly Arg Val Val Gly Gly Gly Gly Cys Met
1 5 10 15

Asp Pro Glu

<210> 92

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 321-3'

<400> 92

gtatgtcggcgc ggggaggctg tatggatcct gag

33

<210> 93

<211> 105

<212> DNA

<213> Ricinus communis

<400> 93
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttcttgct tataaggcca 60
gtggtaccaa attttaatgc tgatgttgt atggatcctg agccc 105

<210> 94

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 321-5'

<400> 94
tcgtcctggg cctccgcac tatacaccat 30

<210> 95

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP321 (UPA) linker

<400> 95
ggaggcccaag gacgagtagt cggcggggga ggc 33

<210> 96

<211> 1819

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP321

<400> 96
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aaacaatacc caattataaa ctaccaca gcgggtgccca ctgtgcaaag ctacacaaac	180
tttacagag ctgttcgcgg tcgttaaca actggagctg atgtgagaca taaaatacca	240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca	300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc	360
taccgtgctg gaaatagcgc atatttctt catcctgaca atcaggaaga tgcagaagca	420
atcactcatc ttttactga tttcaaaat cgatatacat tcgccttgg tggtaattat	480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca	540
ctaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600
ctggctcggt ccttataat ttgcataccaa atgatttcag aagcagcaag attccaatat	660
attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatccttagc	720
gttaattacac ttgagaatag ttggggaga ctttccactg caattcaaga gtctaaccaa	780
ggagcctttg ctagtccaaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840
gatgtgagta tattaatccc tatcatagct ctcattgtgt atagatgcgg aggcccagga	900
cgagtagtcg gcgggggagg ctgtatggat cctgagccca tagtgcgtat ctaggtcga	960
aatggcttat gtgttgcgt tagggatgga agattccaca acggaaacgc aatacagttg	1020
tggccatgca agtctaatac agatgcaa at cagctctgga cttgaaaag agacaatact	1080
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accatcataa atcccagatc tagtctagtt ttagcagcga catcaggaa cagtggtacc	1260
acacttacag tgcaaaccaa cattatgcc gttagtcaag gttggcttcc tactaataat	1320
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gcagatggtt caatacgtcc tcagcaaaac cgagataatt gccttacaag tgattctaatt	1500
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atgttcaaga atgatggaac cattttaaat ttgtatagtg ggttgggtttt agatgtgagg	1620
cgatcggtc cgagccttaa acaaattcatt ctttaccctc tccatggta cccaaaccaa	1680
atatggttac cattatccat atagacagat tactctctt cagtgtgtgt gtcctgccat	1740
gaaaatagat ggcttaataaaaaggacat taaaatttt gtaactgaaa ggacagcaag	1800
ttatatcgaa ttcctgcag	1819

<210> 97
<211> 29
<212> PRT
<213> Ricinus communis

<400> 97

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 98
<211> 17
<212> PRT
<213> Artificial Sequence

<220>

<223> PAP321 (UPA) linker
<400> 98

Cys Gly Gly Pro Gly Arg Val Val Gly Gly Gly Cys Met Asp Pro
1 5 10 15

Glu

<210> 99
<211> 30
<212> DNA
<213> Artificial Sequence

<220>

<223> primer 322-3'
<400> 99
gtatcgccg gggctgtat ggatcctgag

<210> 100
<211> 105
<212> DNA
<213> Ricinus communis

<400> 100
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttcttgct tataaggcca 60
gtggtaacaa atttaatgc tgatgttgtt atggatcctg agccc 105

<210> 101
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> primer 322-5'

<400> 101
tcgtcctggc cccatctat acaccat 27

<210> 102
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> pAP322 (UPA) linker

<400> 102
ggaccaggac gagtagtcgg cgggggc 27

<210> 103
<211> 1813
<212> DNA
<213> Artificial Sequence

<220>

<223> pAP322

<400> 103
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aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtcaaag ctacacaaac 180
tttacagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca taaaatacca 240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggcggc 360
taccgtgctg gaaatagcgc atatttctt catcctgaca atcaggaaga tgcagaagca 420
atcactcatc ttttcaactga tttcaaaaat cgatatacat tcgccttgg tggtaattat 480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600
ctggctcggt ccttataat ttgcattccaa atgatttcag aagcagcaag attccaatat 660
attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720
gtaattacac ttgagaatag ttgggggaga cttccactg caattcaaga gtctaaccaa 780
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tctaattggaa agtgtttaac tacttacggg tacagtccgg gagtctatgt gatgatctat 1140
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ataaaatccca gatctagttct agtttagca ggcacatcag ggaacagtgg taccacactt 1260
acagtgc当地 ccaacattta tgccgttagt caaggttggc ttctactaa taatacaca 1320
cctttgtta caaccattgt tggctatata ggtctgtgt tgcaagcaaa tagtggacaa 1380
gtatggatag aggactgttag cagtggaaag gctgaacaac agtggctct ttatgcagat 1440
ggttcaatac gtcctcagca aaaccgagat aattgcctta caagtgattc taatatacgg 1500
gaaacagttg ttaagatcct ctcttgcggc cctgcattct ctggccaacg atggatgttc 1560
aagaatgtg gaaccatttt aaatttgtat agtgggttgg tggtagatgt gaggcgatcg 1620

gatccgagcc ttaaacaat cattcttac cctctccatg gtgacccaaa ccaaatatgg 1680
ttaccattat tttgatagac agattactct cttgcagtgt gtgtgtcctg ccatgaaaat 1740
agatggctta aataaaaagg acattgtaaa ttttgttaact gaaaggacag caagttatat 1800
cgaattcctg cag 1813

<210> 104

<211> 29

<212> PRT

<213> Ricinus communis

<400> 104

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 105

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP322 (UPA) linker

<400> 105

Cys Gly Pro Gly Arg Val Val Gly Gly Gly Cys Met Asp Pro Glu
1 5 10 15

<210> 106

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 323-3'

<400> 106
attgcagggc aggggggtag tagcggcggg ggatgtatgg atcctgag 48

<210> 107

<211> 105

<212> DNA

<213> *Ricinus communis*

<400> 107
ctcatgggt atagatgcgc acctccacca tcgtcacagt ttttttgct tataaggcca 60
gtggtaccaa atttaatgc tgatgttgtt atggatcctg agccc 105

<210> 108

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 323-5'

<400> 108
tccttgcgga cccccctggag tcccgccctcc gcatctatac accat 45

<210> 109

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP323 (MMP-9) linker

<400> 109
ggaggcggga ctccaggggg tccgcaagga attgcagggc aggggggtag tagcggcggg 60
gga 63

<210> 110

<211> 1849

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP323

<400> 110		
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg	60	
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aaacaatacc caattataaa ctttaccaca gcgggtgccca ctgtgcaaag ctacacaaac	180	
tttattcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca taaaatacca	240	
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca	300	
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggcggc	360	
taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca	420	
atcactcatc ttttcaactga tttcaaaaat cgatatacat tcgccttgg tggtaattat	480	
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca	540	
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact	600	
ctggctcggt ccttataat ttgcataccaa atgatttcag aagcagcaag attccaatat	660	
attgagggag aatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc	720	
gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa	780	
ggagcctttg ctagtccaaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac	840	
gatgtgagta tattaatccc tatcatagct ctcattgtgt atagatgcgg aggcgggact	900	
ccagggggtc cgcaaggaat tgcagggcag gggggtagta gcggcggggg atgtatggat	960	
cctgagccca tagtgcgtat cgtaggtcga aatggtctat gtgttgcgtt tagggatgga	1020	
agattccaca acggaaacgc aatacagttt tggccatgca agtctaatac agatgcaaata	1080	
cagctctgga ctttggaaag agacaataact attcgatcta atggaaagtg tttactact	1140	
tacgggtaca gtccgggagt ctatgtgatg atctatgatt gcaatactgc tgcaactgat	1200	
gccacccgct ggcaaataatg ggataatgga accatcataa atcccagatc tagtctagtt	1260	
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gttagtcaag gttggcttcc tactaataat acacaacctt ttgttacaac cattgttggg	1380	
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gaaaaggctg aacaacagtg ggctctttat gcagatggtt caatacgtcc tcagcaaaac	1500
cgagataatt gccttacaag tgattctaat atacggaaa cagttgttaa gatcctctct	1560
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ctttaccctc tccatggtga cccaaaccaa atatggttac cattatttg atagacagat	1740
tactctcttg cagtgtgtgt gtcctgccat gaaaatagat ggcttaaata aaaaggacat	1800
tgtaaatttt gtaactgaaa ggacagcaag ttatatcgaa ttcctgcag	1849

<210> 111

<211> 29

<212> PRT

<213> Ricinus communis

<400> 111

Cys	Ala	Pro	Pro	Pro	Ser	Ser	Gln	Phe	Ser	Leu	Leu	Ile	Arg	Pro	Val			
1								5							10			15

Val	Pro	Asn	Phe	Asn	Ala	Asp	Val	Cys	Met	Asp	Pro	Glu						
			20						25									

<210> 112

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP323 (MMP-9) linker

<400> 112

Cys	Gly	Gly	Gly	Ser	Ser	Gly	Gly	Pro	Gln	Gly	Ile	Ala	Gly	Gln	Gly			
1								5							10			15

Gly	Ser	Ser	Gly	Gly	Cys	Met	Asp	Pro	Glu									
			20						25									

<210> 113

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 324-3'

<400> 113

attgcagggc agggtagtag cggcggggga tgtatggatc ctgag

45

<210> 114

<211> 105

<212> DNA

<213> Ricinus communis

<400> 114

ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttcttgct tataaggcca 60

gtggtagccaa attttaatgc tgatgttgt atggatcctg agccc

105

<210> 115

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 324-5'

<400> 115

tccttgccga cctggagtcc cgcctccgca tctatacacc at

42

<210> 116

<211> 57

<212> DNA

<213> Artificial Sequence

tacagtccgg gagtctatgt gatgatctat gattgcaata ctgctgcaac tgatgccacc	1200
cgctggcaaa tatggataa tggaaccatc ataaatccca gatctagtct agtttagca	1260
gacatcg ggaacagtgg taccacactt acagtgc当地 ccaacattt tgccgttagt	1320
caagggttggc ttcctactaa taatacaca cctttgtta caaccattgt tggctat	1380
ggtctgtgct tgcaagcaaa tagtggacaa gatggatag aggactgtag cagtgaaaag	1440
gctgaacaac agtgggctct ttatgcagat gttcaatac gtcctcagca aaaccgagat	1500
aattgcctta caagtgattc taatatacgg gaaacagttt ttaagatcct ctcttgcc	1560
cctgcattcct ctggccaacg atggatgttc aagaatgtatg gaaccattt aaatttgtat	1620
agtgggttgg ttttagatgt gaggcgatcg gatccgagcc ttaaacaat cattcttac	1680
cctctccatg gtgacccaaa ccaaataatgg ttaccattat tttgatagac agattactct	1740
cttgcagtgt gtgtgtcctg ccatgaaaat agatggctta aataaaaagg acattgtaaa	1800
ttttgtaact gaaaggacag caagttat cgaattcctg cag	1843

<210> 118

<211> 29

<212> PRT

<213> Ricinus communis

<400> 118

Cys	Ala	Pro	Pro	Pro	Ser	Ser	Gln	Phe	Ser	Leu	Leu	Ile	Arg	Pro	Val
1					5				10			15			

Val	Pro	Asn	Phe	Asn	Ala	Asp	Val	Cys	Met	Asp	Pro	Glu			
			20					25							

<210> 119

<211> 25

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP324 (MMP-9) linker

<400> 119

Cys Gly Gly Gly Ser Ser Gly Pro Gln Gly Ile Ala Gly Gln Gly Ser
1 5 10 15

Ser Gly Gly Gly Cys Met Asp Pro Glu
20 25

<210> 120

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 325-3'

<400> 120
attgcagggc agagtagcgg cgggggatgt atggatcctg ag 42

<210> 121

<211> 105

<212> DNA

<213> Ricinus communis

<400> 121
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtagccaa attttaatgc tgatgttgt atggatcctg agccc 105

<210> 122

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 325-5'

<400> 122
tccttgcgggt ggagtccgcg ctccgcatct atacaccat 39

<210> 123

<211> 51
<212> DNA
<213> Artificial Sequence

<220>

<223> pAP325 (MMP-9) linker

<400> 123
ggaggcggga ctccaccgca aggaattgca gggcagagta gcggcgggggg a 51

<210> 124
<211> 1837
<212> DNA
<213> Artificial Sequence

<220>

<223> pAP325

<400> 124
gaattccatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60
ctttgtttg gatccaccctc agggtggtct ttcacattag aggataacaa catattcccc 120
aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180
tttacatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240
gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300
aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggcggc 360
taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420
atcactcatc ttttcaactga tggtaaaaat cgatatacat tcgcctttgg tggtaattat 480
gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540
ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600
ctggctcggt ccttataat ttgcataccaa atgatttcag aagcagcaag attccaatat 660
attgagggag aatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720
gtaattacac ttgagaataag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780
ggagcccttg ctatcataat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840
gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg aggcgggact 900

ccaccgcaag	gaattgcagg	gcagagtagc	ggcgaaaaat	gtatggatcc	tgagccata	960
gtgcgtatcg	taggtcgaaa	tggctatgt	gttgcgttta	gggatgaaag	attccacaac	1020
ggaaacgcaa	tacagttgtg	gccatgcaag	tctaatacag	atgcaaatca	gctctggact	1080
ttgaaaagag	acaatactat	tcgatctaat	ggaaagtgtt	taactactta	cgggtacagt	1140
ccgggagtct	atgtgatgtat	ctatgattgc	aatactgctg	caactgatgc	cacccgctgg	1200
caaataatggg	ataatgaaac	catcataaat	cccagatcta	gtctagtttt	agcagcgaca	1260
tcagggaaaca	gtggtaaccac	acttacagtg	caaaccaaca	tttatgccgt	tagtcaaggt	1320
tggcttccta	ctaataatac	acaacccccc	gttacaacca	ttgttgggct	atatggtctg	1380
tgcttgcaag	caaataagtgg	acaagttatgg	atagaggact	gtagcagtga	aaaggctgaa	1440
caacagtggg	ctctttatgc	agatggttca	atacgtcctc	agcaaaaaccg	agataattgc	1500
cttacaagtg	attctaataat	acggaaaca	gttgttaaga	tcctctcttg	tggccctgca	1560
tcctctggcc	aacgatggat	gttcaagaat	gatgaaacca	ttttaaattt	gtatagtggg	1620
ttgggtttag	atgtgaggcg	atcgatccg	agccttaaac	aaatcattct	ttaccctctc	1680
catggtgacc	caaaccataat	atggttacca	ttatttgtat	agacagatta	ctctttgca	1740
gtgtgtgtgt	cctgccatga	aaatagatgg	cttaaataaa	aaggacattg	taaattttgt	1800
aactgaaagg	acagcaagtt	atatcgaatt	cctgcag			1837

<210> 125

<211> 29

<212> PRT

<213> Ricinus communis

<400> 125

Cys	Ala	Pro	Pro	Pro	Ser	Ser	Gln	Phe	Ser	Leu	Leu	Ile	Arg	Pro	Val
1					5				10			15			

Val	Pro	Asn	Phe	Asn	Ala	Asp	Val	Cys	Met	Asp	Pro	Glu			
			20					25							

<210> 126

<211> 23

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP325 (MMP-9) linker

<400> 126

Cys Gly Gly Gly Ser Ser Pro Gln Gly Ile Ala Gly Gln Ser Ser Gly
1 5 10 15

Gly Gly Cys Met Asp Pro Glu
20

<210> 127

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic construct

<400> 127

ataacttgct gtcctttca

20

<210> 128

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic construct

<400> 128

ccgggaggaa atactattgt aat

23

<210> 129

<211> 43

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic construct

<400> 129

ggaggaatcc ggagatgaaa ccggggaggaa atactattgt aat

43

<210> 130

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic construct

<400> 130

gttaggcgcgtg cagataactt gctgtccttt cag

33